

2-12/14

A.G. Rashin, The Population of Russia for 100 Years (1811-1913). Statistical sketches. Edited by Academician S.G. Strumilin. Gosstatizdat, 1956, 351 pages

dren in the Don ~~Cossack~~ Oblast, from 160 to 265 per 1000. This apparent increase can be explained by more complete registration. The data on the Asian part of Russia are also questionable as to completeness. The same is true of the Caucasus, where registration was fairly good in the north but extremely poorly organized in the rest of the Caucasus. The per cent of literacy in 1913 is calculated: an exceptional instance which the author analyzed. The absence of graphical illustrations is a serious drawback of the book. The bibliographic references and the sources of the pre-revolutionary Russian statistics are not given.

AVAILABLE: Library of Congress

Card 4/4

AUTHOR: Urlanis, B. SOV-2-58-7-10/14
TITLE: The Definition of a Family in Census Taking (Ponyatiye sem'i
v perepisyakh naseleniya)
PERIODICAL: Vestnik statistiki, 1958, Nr 7, pp 80 - 82 (USSR)
ABSTRACT: The author gives a definition of the "family" concept. According to Soviet statistical usage a family is considered to exist when some people connected by relationship are living at the same place, and when the total income is used to maintain these people. The person earning more than the other family members is "head of the family". This person need not be a man.

Card 1/1

URLANIS, B. S.

"TERCENTENARY OF DEMOGRAPHY"

Report submitted to the Soviet Bloc Presentations at the
33rd Session of the International Statistical Institute
Pertaining to Economical Statistical Processes.
Paris, France 29 Aug. - 7 Sep 61

NEMCHINOV, V.S., akademik, otv. red.; KAFENGAUZ, B.B., red.; KLIMENKO, K.I., red.; MINTS, L.Ye., red.; OBLOMSKIY, Ya.A., red.; PASHKOV, A.I., red.; PROBST, A.Ye., red.; SOROKIN, G.M., red.; VELANIS, B.T.S., red.; KHOMYAKOV, A.I., red. izd-va; VOLKOVA, V.Ye., tekhn. red.

[Problems of the national economy of the U.S.S.R.; on the 85th birthday of Academician Stanislav Gustavovich Strumilin] Voprosy narodnogo khoziaistva SSSR; k 85-letiiu akademika Stanislava Gustavovich Strumilina. Moskva, Izd-vo Akad. nauk SSSR, 1962. (MIRA 15:12)
417 p.

1. Akademiya nauk SSSR. Otdeleniye ekonomicheskikh, filosofskikh i pravovykh nauk.
(Strumilin, Stanislav Gustavovich, 1877-) (Economics)

URLATIS, B. Ts.

"Dinamika, geografiya i faktory roznodayemosti narodov SSSR."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences,
Moscow, 3-10 Aug 64.

FEDORENKO, N.P., otvetstvennyy redaktor; VAYNSHTEYN,
A.L., red.; MINTS, L.Ye., red.; URLANIS, B.TS., red.;
FOMIN, B.S., red.; USVYATSEV, A.Ye., red.; BAKOVETSKAYA,
V.S., red.; PLISKINA, Ye.M., red.; GUS'KOVA, O.M., tekhn.red.

[Planning and the methods of mathematical economics; on the
70th birthday of Academician V.S.Nemchinov] Planirovanie i
ekonomiko-matematicheskie metody; k semidesiatiletiyu so dnia
rozhdeniia akad. V.S.Nemchinova. Moskva, Izd-vo "Nauka,"
1964. 479 p. (MIRA 17:1)

1. Akademiya nauk SSSR. Otdeleniye ekonomicheskikh nauk.
2. Chlen-korrespondent AN SSSR (for Fedorenko).

URLANIS, R. S.

"Increase of Life Span in the USSR (N 5)."

report presented at the 32nd Meeting, International Statistical Institute, Tokyo,
Japan, 30 May - 9 June 1960.

URLADOV, B.D., inzhener-polkovnik

Creativity of efficiency producers. Vest. Vost. Fl. no. 1:65-70
Ja '60. (MIRA 13:8)

(Russia--Air force)

Uralapor G. G.

Industrial turpentine of Siberian cedar in Altai. G. G.
Uralapor (Wood Chem. Combine Altai Region). *Peres-
belskoye* (Leningradskaya i Leningradskaya Prov. 3. No. 6, 27-8
1954) — The production of oleoresin was 3, 22 50 74
101, and 130 tons for the years 1948-53 inclusive with
yields per acre of 150, 120, 514, 320, 280 and 340 g. 100
m. its per acre of 19, 14, 20, 25, 28 and 30 g.
resp.

УРЕЛАПОВ, Г.Г.

Industrial tapping of Siberian pine in the Altai. Der. 1 lesokhim.
prom. 3 no.6:27-28 Je '54. (MLRA 7:7)

1. Glavnyy inzhener tresta Altaykhimles.
(Altai Territory--Tree tapping) (Tree tapping--Altai Territory)

URLAPOVA, M.N., inzh.

Heating of oxide coated cathodes in ionic devices using a discharge
current. Trudy MEI 55:227-238 '65. (MIRA 18:10)

9(3)

SOV/162-58-3-26/26

AUTHORS:

Sobolev, V.D., and Urlapova, M.N.

TITLE:

Measuring the Thermal Electron Emission of an Oxide Cathode in Ionic Devices (Izmereniye termoelektronnoy emissii oksidnogo katoda v ionnykh priborakh)

PERIODICAL:

Nauchnyye doklady vysshey shkoly, Radiotekhnika i elektronika, 1958, Nr 3, pp 192-198 (USSR)

ABSTRACT:

The volt-ampere characteristic of a hot-cathode gas-discharge rectifier tube, plotted with dc, shows a saturation point at anode currents greater than the emission current of the cathode, as shown by figure 1. With hot-cathode gas-discharge rectifier tubes having an oxide-coated cathode, it is not possible to detect this point due to the Schottky effect and due to the considerable heating of the cathode by the anode current. For determining the emission current of an oxide-coated cathode in vacuum devices, the volt-ampere characteristic is frequently plotted at a reduced cathode temperature with subsequent extrapolation of the Richardson line within the range

Card 1/3

SOV/162-58-3-26/26

Measuring the Thermal Electron Emission of an Oxide Cathode in
• Ionic Devices

of working temperatures. Such a method is not applicable for ionic devices, since at a reduced cathode temperature, the discharge will be concentrated at one spot and the resulting sparking will destroy the oxid. coating. Presently, there are no satisfactory methods for measuring the thermal electron emission of an oxide-coated cathode in ionic devices. Therefore the authors suggest using the pulse method for measuring the emission current of oxide-coated cathodes of gas-discharged rectifier tubes and thyatrons designed for continuous duty. The authors found that the pulse voltage drop with a thyatron at low pulse current densities is close to the magnitude of the voltage drop during continuous duty, when comparing the volt-ampere characteristic with the pulse characteristic. The method suggested by the authors was successfully tested on industrial thyatrons and one experimental tubes, where-

Card 2/3

SOV/162-58-3-26/26

Measuring the Thermal Electron Emission of an Oxide Cathode in
Ionic Devices

by the cathode of the TG1-0.1/1.3 thyatron was used for the latter. The cathode emission during discharge work was compared with the cathode emission in a vacuum as shown by figure 8, whereby it was established that the pulse volt-ampere characteristic is determined by the thermal electron emission current of the cathode. There are 1 circuit diagram, 7 graphs and 7 Soviet references.

ASSOCIATION: Kafedra promyshlennoy elektroniki Moskovskogo energeticheskogo instituta : (Chair of Industrial Electronics of the Moscow Power Engineering Institute)

SUBMITTED: June 7, 1958

Card 3/3

66326

SOV/162-59-1-26/27

~~9-12, 31~~ 9.3/20

AUTHORS: Sobolev, V.D., Urlapova, M.N.

TITLE: Measuring the Emission of an Oxide-Coated Cathode in an Ionic Device During Its Useful Life

PERIODICAL: Nauchnyye doklady vysshey shkoly, Radiotekhnika i elektronika, 1959, Nr 1, pp 220-225

ABSTRACT: The method of plotting the pulse voltampere characteristic at low current densities is used for measuring the emission of an oxide-coated cathode in ionic devices during their useful life. The experiments performed by the authors show that this method provides the possibility to compare the quality of different cathodes, to uncover deficiencies in the manufacturing technology, to estimate the useful life of a cathode, to check the condition of a cathode during the operation, thus vacuum tubes may be replaced in equipment, which are close to a failure. Showing the causes of an emission reduction is not the scope of this paper. According to a preceding paper of the aforementioned authors

Card 1/3

X

66326

SOV/162-59-1-26/27

Measuring the Emission of an Oxide-Coated Cathode in an Ionic Device During Its Useful Life

[Ref 1] numerical data characterizing the thermionic emission of an oxide-coated cathode in ionic devices may be obtained from the analysis of the pulse voltampere characteristic, which is plotted at low current densities. The experiments were performed with TG1-Q1/1.3 thyratrons (the screen was connected with the anode). The pulse voltampere characteristics were plotted prior to testing the useful life of the thyratrons and at certain intervals during the service life tests. The pulse circuit used consisted of a conventional modulator connected in series with a load and the thyatron to be tested. The voltampere characteristics were plotted using rectangular pulses of 5 microseconds duration and a pulse repetition rate of 200 cps. There are 4 graphs and 1 Soviet reference.

ASSOCIATION: Kafedra promyshlennoy elektroniki Moskovskogo energo-
Card 2/3 ticheskogo instituta (Chair of Industrial Electro-
4

66326

SOV/162-59-1-26/27

Measuring the Emission of an Oxide-Coated Cathode in an Ionic Device During Its Useful Life

nics of the Moscow Power Engineering Institute)

SUBMITTED: October 28, 1958

4

Card 3/3

BACHURIN, N.I., inzh.; VOLKOV, S.S., inzh.; GORODETSKIY, S.S., prof.,
 doktor tekhn. nauk; GUSEV, S.A., dotsent, kand. tekhn. nauk;
 ZHUKHOVITSKIY, B.Ya., dots., kand. tekhn. nauk;
 IVANOV-SMOLENSKIY, A.V., dots., kand. tekhn. nauk; KIFER,
 I.I., dots., kand. tekhn. nauk; KORYTIN, A.A., starshiy pre-
 podavatel'; KULIKOV, F.V., dots.; NIKULIN, N.V., dots., kand.
 tekhn. nauk; PODMAR'KOV, A.N., dots.; PRIVEZENTSEV, V.A., prof.,
 doktor tekhn. nauk; RUMSHINSKIY, L.A., dots., kand. fiz.-mat.
 nauk; SOBOLEV, V.D., dots., kand. tekhn. nauk; URLAPOVA, M.N.,
 inzh.; TIKHOMIROV, P.M., dots., kand. tekhn. nauk; FEDOROV,
 A.A., dots., kand. tekhn. nauk; CHUNIKHIN, A.A., dots., kand.
 tekhn. nauk; CHILIKIN, M.G., prof., glav. red.; GOLOVAN, A.T.,
 prof., red.; GRUDINSKIY, P.G., prof., red.; PETROV, G.N., prof.,
 doktor tekhn. nauk, red.; FEDOSEYEV, A.M., prof., red.; ANTIK,
 I.V., inzh., red.; BORUNOV, N.I., tekhn. red.

[Electrical engineering handbook]Elektrotekhnicheskii spra-
 vochnik. 3., perer. i dop. izd. Pod obshchei red. A.T.
 Golovana i dr. Moskva, Gosenergoizdat. Vol.1. 1962. 732 p.
 (MIRA 15:10)

1. Moskovskiy energeticheskiy institut (for Golovan, Grudinskiy,
 Petrov, Fedoseyev, Chilikin, Antik).
 (Electric engineering--Handbooks, manuals, etc.)

I 05230-67 RT(1)/MT(m) IJT(c) AT/DS
ACC NR: AAS019904

SOURCE CODE: UR/0275/66/000/002/A037/A037

AUTHOR: Urlopova, M. N.

TITLE: Heating the oxide coated cathode in ionic devices with discharge current

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 2A248

REF SOURCE: Tr. Mosk. energ. in-ta, vyp. 55, 1965, 227-237

TOPIC TAGS: thyatron, thermocouple, precision potentiometer, heat measurement, CATHODE

ABSTRACT: Heating the oxide coated cathode (K) with discharge current has a substantial effect on the life of ionic devices. It is of particularly great importance in hydrogen pulse thyratrons where heating of the K makes it necessary to limit the maximum density of the current in the pulse to a value of from 10-20 amps/cm², whereas the sparking current density is 50-60 amps/cm². Thermocouples (chromel-alumel, 100 microns in diameter), welded to the K core, were used to measure thermal electromotive force with an accuracy of within 0.1 millivolt. Hydrogen thyratrons TG-0.5/12 (K emission surface about 5 cm²) and TG-1/22 (about 10 cm²) were used to investigate K heating in continuous operation. The K in both types is a cylinder with external fins. The hydrogen generator had individual outlets, making it possible to change the hydrogen pressure over a wide range, independent of K incandescence. The lower the initial temperature, the greater the

UDC: 621.385.137.2/.3

Card 1/2

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ACC NR: AR6019904

increase in K temperature. For the same identical plate current the power for heating the K was higher the lower its initial temperature, and brought about a correspondingly greater increase in it. The dependence is connected with the increase in the resistance of the oxide with a decrease in K temperature, as well as with a possible increase in the cathode drop at higher currents, resulting in an increase in the Joule, as well as the ionic, components of the power. The increase in resistance and the cathode drop with reduction in K temperature can be seen from the volt-ampere characteristics for the tube. In most tubes the K fins are heated somewhat more by the plate current (the result of the greater current density at the fins). Both an increase in the power for heating the K, as well as a decrease in its dependence on the dominance of the effect of pressure or K temperature, can be brought about in the case of a predetermined plate current and a reduction in pressure. A tube with two moveable cylindrical screens, which could be brought closer to the K or raised toward the plate, was built in order to ascertain the effect the degree of shielding of the K had on its thermal regime. When the screen discharge is burning the cathode drop is reduced and a uniform distribution of K current is obtained, resulting in a considerable reduction in heating power. Bibliography of 2 titles. P. N. [Translation of abstract]

SUB CODE: 09

Card 2/2

MAKSUMOV, A., kand. sel'skokhozyaystvennykh nauk; MANSUROV, N., kand. sel'skokhozyaystvennykh nauk; DEMIN, Yu., kand. sel'skokhozyaystvennykh nauk; CHUMACHENKO, I., kand. sel'skokhozyaystvennykh nauk; URLAPOVA, Ye.; NURMATOV, A.; ERGASHEV, R.; SAPIULIN, P.

Three crops a year. Zemledelie 25 no.2:27-31 F '63. (MIRA 16:5)

1. Tadzhikskiy nauchno-issledovatel'skiy institut sel'skogo khozyaystva.

(Gissar Valley--Field crops)

MAKSIMOV, P.M., professor; NEVSKIY, A.A., assistant; NAGOVITSINA, M.A., assistant; MARTYNOV, P.V., assistant; URLASHEVA, A.V., assistant

Substitution of blood in clinical practice. Vest.khir. no.5:
30-33 '61. (MIRA 15:1)

1. Iz gospi'tal'noy khirurgicheskoy kliniki (zav. - prof. P.M. Maksimov) i gospi'tal'noy terapevticheskoy kliniki (zav. - prof. Ye.S. Myasoyedov) Ivanovskogo meditsinskogo instituta.
(BLOOD PLASMA SUBSTITUTES)

YUGOSLAVIA/General and Special Zoology. Insects

Abs Jour : Ref Zhur - Biol., No 6, 1958, No 25827

Author : Urlob F.

Inst : Not Given

Title : Additions to the Biology of the Pine Cryphal. (Dopolneniya k biologii drifala pikhtovogo (Cryphalus piceae Rtzb.)).

Orig Pub : Gozd. vostn., 1957, 15, No 5, 137-144

Abstract : No abstract

Card : 1/1

URLI, N.; VARICAK, M.

The Peltier effect in semiconductors. Vss mat fiz Srb no.12:91-95
'60.

1. Fizicki institut Prirodoslovno-matematickog fakulteta
i Institut "Ruder Boskovic," Zagreb).

URLI, N. (Zagreb); ZUPPA, M. (Zagreb)

Effect of 14 MeV neutron bombardment on disordered regions in
n-type germanium. *Glas mat fiz Hrv* 17 no.3/4:223-232 '62
[publ.'63].

1. Institute "Ruder Boskovic", Zagreb.

YUGOSLAVIA

URLIC, Primarius Dr Velimir; Public Health Center (Zavod za Zastitu zdravlja,) Split.

"A Proposed Change in the Current Procedure for Control of Salmonella Carriers."

Belgrade, Narodno Zdravlje, Vol 21, No 6-7, 1965; pp 196-200.

Abstract [English summary modified] : Review of status of salmonellosis in Dalmatia, considered quite unsatisfactory on the basis of carrier detection ratios. A number of proposed changes in procedure are presented to improve this situation, with required legislative and regulatory changes based on actual field experience. Two maps, table.

1/1

URLIC, V.

Rickettsioses in Dalmatia. Higijena, Beogr. 12 no.2/3:217-225 '60.
(RICKETTSIAL DISEASES epidemiol)

URLIC, Velimir, prim., dr (Split)

Murine typhus in Dalmatia. Med. glasn. 15 no.11:405-407 N '61.

1. Mikrobioloski odjel Higijenskog zavoda u Splitu (Sef: prim. dr
V. Urlic)

(TYPHUS MURINE epidemiol)

URLIC-PEJGIC, N.

"Investigation of the behavior of refractory materials on burning and cooling." p. 389.
(Priroda, Vol. 18, no. 6/7, 1953. Zagreb).

SU: Monthly List of East European Accessions, Vol. 3, no. 3, Library of Congress. March 1954.
Uncl.

URLIN, V.

Operation of a catamaran motorship. Rech.transp. 22 no.1:22 Ja
'63. (MIRA 16:2)

1. Kapitan-I pomoshchnik mekhanika teplokhoda "KT-619".
(Motorships--Handling)

25699

S/181/61/003/007/021/023
B104/B203

1.1210

AUTHORS:

Kormer, S. B., Urtin, V. D., and Popova, L. T.

TITLE:

The interpolation equation of state and its application in the description of experimental data on the shock compression of metals

PERIODICAL: Fizika tverdogo tela, v. 3, no. 7, 1961, 2131 - 2140

TEXT: It was shown that the equation of state with elastic curves in the simple form of F. D. Murnaghan (Am. J. Math., 59, 235, 1937) and Lenard-Jones (M. Born and Huang Kun, Dinamicheskaya teoriya kristallicheskikh reshetok (Dynamic theory of crystal lattices), I, IL, M., 1958; R. Fürth, Proc. Roy. Soc., A183, no. 992, 87, 1944) does not permit a description of experimental data on shock compression of metals in a wide pressure range with an accuracy close to that of the experimental data. The authors suggest an interpolation equation for an elastic curve in the form of a series of $-\delta^{1/3}$, and a method of finding the unknown parameters contained therein. The resulting equation permits the elastic curve to be described with sufficient accuracy as a function of pressure in the range

Card 1/5

25699

S/181/61/003/007/021/023
B104/B203

The interpolation...

of $10^{14} - 10^{15}$ dyne/cm² after making one correction on the shock adiabat. The equation of state with electron components (L. V. Al'tshuler et al., ZHETF, 38, no. 3, 790, 1960) and the resulting elastic curve describes the shock adiabat in a pressure range of up to $5 \cdot 10^{12}$ dyne/cm² with an accuracy of $\pm 3\%$. The equations of state considering the electron terms read as follows:

$$p = p_e(\delta) + \gamma(\delta) c_e \rho_k \delta \left(T - T_0 + \frac{E_0}{c_e} \right) + \frac{p_k}{4} \beta_k \delta^{1/2} T^2, \quad (2)$$

$$E = E_e(\delta) + c_e \left(T - T_0 + \frac{E_0}{c_e} \right) + \frac{p_k}{2} \delta^{-1/2} T^3, \quad (3)$$

In a pressure range of $0 - 10^{15}$ dyne/cm² at $T = 0^\circ\text{K}$, $p_x = \sum_{i=1}^n a_i \delta^{1/3+1} \quad (1)$,

where $\delta = \rho/\rho_k$, $E_x = \int_1^x p_x d\delta/\rho_k \delta^2$ the inner energy at $T = 0^\circ\text{K}$, E_0 the inner energy under normal conditions ($p=0$, $T=T_0=300^\circ\text{K}$), β_k is the coefficient of the electron heat conductivity at $\rho = \rho_k$, and

$$\gamma = \frac{1}{3} + \frac{\delta}{2} \frac{\frac{d^2 p_e}{d\delta^2}}{\frac{dp_e}{d\delta}} \quad (4)$$

Card 2/5

25699

S/181/61/003/007/021/023
B104/B203

The interpolation...

is the Grüneisen coefficient. With the use of Hugoniot's adiabatic equation, the interesting function $p_r(\rho)$ is obtained from the above relations.

The coefficients a_i in (1) were calculated by a method developed by the authors in a previous paper (DAN SSSR, 131, no. 3, 1960). Fig. 1 compares the calculated dynamic adiabatics with experimental data found by other authors. Further, it is shown that the existing differences between experimental and calculated data can be reduced by using in the expression obtained for p_x an experimental point on the Hugoniot adiabatic

as correction. Thus, the deviations between experimental and theoretical data do not exceed $\pm 3\%$ for all metals. In a study of the dependence of the Grüneisen coefficient on density, it is shown that the "undulatory" dependences of this coefficient on density found in previous papers have no physical sense, and can only be considered as solution of a differential equation. In the method suggested here, these shortcomings are avoided; at high densities ($\delta > 3$), however, the Grüneisen coefficient is not correct in this case. In the closing part, it is shown that the method suggested does not permit a consideration of phase transformations or other deviations from the monotonic change in the substance properties at pressure changes. The authors thank B. P. Tikhomirov for programing

Card 3/5

The interpolation...

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the computations carried out on a "Strela" computer, and Academician Ya. B. Zel'dovich for a discussion and valuable remarks. Ya. B. Zel'dovich, A. S. Kompaneyets, L. V. Al'tshuler, A. A. Bakanova, and R. F. Trunin are mentioned. There are 5 figures, 1 table, and 19 references: 9 Soviet-bloc and 10 non-Soviet-bloc.

SUBMITTED: January 28, 1961 (initially), and
March 7, 1961 (after revision)

Card 4/5

35557

S/056/62/042/003/007/049
B104/B102

245300 18.8100

AUTHORS: Kormer, S. B., Funtikov, A. I., Urlin, V. D., Kolesnikova, A.N.

TITLE: Dynamic compression of porous metals and the equation of state with variable specific heat at high temperatures

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 686 - 702

TEXT: The dynamic compression of Al, Cu, Pb, and Ni with relative densities between $m = 1$ and $m = 4$ ($m = \rho_0/\rho_{00}$, where ρ_0 = density of the compact material, ρ_{00} = density of the porous material) was studied in the pressure range of $0.7 \cdot 10^{12}$ - $9 \cdot 10^{12}$ dynes/cm². A polyempirical interpolated equation of state is developed which takes account of the specific heat variations and the density and temperature dependence of the Grüneisen coefficient

$$P = P_x(\rho) + \frac{3\gamma(\rho) + z(\rho, T)}{1 + z(\rho, T)} \rho R (T - \hat{T}) + g(\rho) \rho \frac{b^2}{\beta(\rho)} \ln \operatorname{ch} \frac{\beta(\rho) T}{b}, \quad (14)$$

$$E = E_x(\rho) + \frac{2 + z(\rho, T)}{1 + z(\rho, T)} \cdot \frac{3}{2} R (T - \hat{T}) + \frac{b^2}{\beta(\rho)} \ln \operatorname{ch} \frac{\beta(\rho) T}{b}. \quad (15).$$

Card 1/3

S/056/62/042/003/007/049
B104/B102

Dynamic compression of...

The equations of state of Mie-Grüneisen, and the equation of state with the electronic specific heat components, are special cases of (14), (15). Solid metals and metal vapors can be described by these equations of state. The shock adiabats calculated for metals of different densities are in good agreement with experimental data. The gas pressure and the lattice energy can be determined from the equation of state by a limiting process. The electronic analog of the Grüneisen coefficient is found for Cu and Ni, and estimated for Pb and Al. Symbols used in the equations: γ is the Grüneisen coefficient, $\beta(e)$ the electronic specific capacity, $z = 1RT/c_x^2$, where l is a quantity to be determined experimentally.

K. K. Krupnikov, B. N. Ledenev, L. V. Al'tshuler, A. A. Bakanova, R. F. Trunin, V. N. Zharkov, V. A. Kalinin, and N. N. Kalitkin are mentioned. S. V. Yezhkov, G. M. Yesin, and V. I. Yefremov are thanked for assisting with experiments, Yu. A. Glagoleva and L. T. Popova for assisting with calculations, L. V. Al'tshuler, A. A. Bakanova, K. K. Krupnikov, and R. F. Trunin for discussions, and Ya. B. Zel'dovich, V. P. Kopyshchev, Yu. P. Rayzer, and K. A. Semendyayev for consultations. There are 11 figures, 5 tables, and 22 references: 15 Soviet and 7 non-Soviet. The four most recent references to English-language publications.

Card 2/3

S/056/62/042/003/007/049
B104/B102

Dynamic compression of...

read as follows: R. G. McQueen, S. P. Marsh, J. Appl. Phys., 31, 1253, 1960; J. S. Dugdale, D. K. McDonald, Phys. Rev., 89, 832, 1953; J. J. Gilvarry, Phys. Rev., 96, 934, 944; 99, 550, 1955; Handbook of Chemistry and Physics, 37ed Chemical Rubber publishing Co. Cleveland, 1955 - 1956.

SUBMITTED: August 10, 1961

Card 3/3

L 16969-63
 Ps-4/Pd-4/Pf-4 WW/JD
 EPR/EPA(b)/EWP(k)/EWP(q)/EWT(m)/BDS
 S/020/63/149/006/011/027
 AFETC/ASD

71

AUTHOR: Umlin, V. D., and Ivanov, A. A.

TITLE: Melting on compression by shock waves

PERIODICAL: Akademiya nauk SSSR. Doklady. v. 149, no. 6, 1963, 1303-1306

TEXT: On compression by strong shock waves, matter is heated to very high temperatures of the order of several dozen thousand degrees Centigrade. The authors investigate the known literature on the subject and present estimates showing that by careful mechanical measurements of shock waves it is possible to determine the point of intersection of the adiabatic curve of compression with the melting curve. The calculations are based on the assumption that a thermodynamic equilibrium sets in behind the wave front. Melting in solid substances is compared with melting in porous substances. The effect of melting on the speed of sound behind the front of the shock wave is evaluated, and it is found that then the speed of sound decreases. A new way of determining the melting curve is presented. There are 2 tables.

SUBMITTED: July 30, 1962

Card 1/1

ACCESSION NR: AP4047885

5'0056/64/047/004/1202/1213

AUTHOR: Kormer, S. B.; Sinitsey*n, M. V.; Puntikov, A. I.; Umlin, V. D.; Blinov, A. V.

TITLE: Investigation of the compressibility of five ionic compounds
at pressures up to 5 Mb

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47,
no. 4, 1964, 1202-1213

TOPIC TAGS: compression, high pressure, compressibility, ionic crystal

ABSTRACT: The dynamic compression of LiF , NaCl , KCl , KBr , and CsBr ionic crystals of normal and reduced density is investigated for a wide range of pressures, densities, and temperatures. The highest pressure attained was 5 Mb, and the maximum compression ratio (density/reduced density) was 3.6. The experimental data can be described by an equation of state in which the temperature change due to specific heat and the thermal excitation of electrons is taken into account.

Card 1/2

L 13950-65

ACCESSION NR: AP4047885

The data obtained indicate an anomalous behavior of NaCl, KCl, KBr, and LiF crystals during shock compression. For the first three crystals, density discontinuities were detected in the liquid state. It is suggested that this may be due to a change in the coordination number which occurs during the same length of time in which a shock wave is propagated along a sample. Orig. art. has: 7 figures, 4 tables, and 4 formulas.

ASSOCIATION: none

SUBMITTED: 18Apr64

ENCL: 00

SUB CODE: SS, ME

NO REF SOV: 012

OTHER: 004

ATD PRESS: 3133

Card 2/2

L 41067-65 EWP(m)/LWT(1) Pg-1

URV0056/65/048/004/1033/1049

ACCESSION NR: AP5010495

AUTHOR: KORMAN, S. I.; Kirillov, G. A.; Ustin, V. D.

SOURCE: Zhurnal eksperimental'noy fiziki
1033-1049

TOPIC TAGS: shock wave temperature, shock wave front, high temperature, wave treatment, KCl shock wave treatment

ABSTRACT: Temperature determinations were made at the 4780 and 6250 Å wavelengths on the basis of the brightness of the shock wave fronts as compared to the brightness of the reference light source. The measurements were carried out on NaCl and KCl single crystals (40 x 40 x 20 mm). The shock wave in the crystals was created by the impact of a metal plate accelerated by an explosion to speeds of 5-6 km/sec. The experimental arrangement and method (described in the article) made it possible to exclude interference from the air shock wave and the lateral effects of the

Card 1/1

L 2760-66 EWT(1)/EWP(m)/EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(z)/EWP(b)/FCS(k)/
 ACCESSION NR: AP5021113 EWA(h)/EWA(1) IJP(c) UR/0056/65/049/002/0483/0492
 JD/WH/JW/HN/JG

AUTHOR: Urlin, V. D. 44.55

TITLE: Melting at ultrahigh pressure in a shock wave 1, 44.55

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1963,
 485-492

TOPIC TAGS: shock wave thermodynamics, compression shock wave, superhigh pressure,
 equation of state, metal melting, aluminum, copper, nickel, lead

ABSTRACT: This is a continuation of an earlier work by the author (with B. B. Kormer et al., ZhETF v. 48, 1033, 1965), where the melting of shock-compressed ionic crystal was first investigated. Using the equations of state of the liquid and solid phase, derived with allowance for experimental data on shock compression, the author determines the melting curves of Al, Cu, Ni, and Pb raised to pressures up to several million atmospheres by shock waves, and considers the difference between the shock adiabates in the two phases. A semi-empirical equation of state is derived for liquid metals. It is noted that the entropy of the solid phase increases along the melting curve, so that melting can take place in the relaxation wave. The results show that melting under shock compression gives rise to noticeable anomalies in the temperature vs. pressure curve along the shock adiabat, and has a relatively small effect on the form of the adiabat when plotted in pressure-volume coordi-

Card 1/2

L 2760-66

ACCESSION NR: AP5021113

18

nates. The shockadiabates of the solid and liquid phase can be approximated in D, U coordinates (D - wave velocity, U - mass velocity) by means of straight lines having different slopes, making it possible to estimate the position of the melting curve from the experimentally measured plot of D against U. Melting leads to jumps in the velocity of sound behind the shock-wave front on the melting range boundary. The results confirm the conclusions of the earlier paper. Orig. art. has: 3 figures, 7 formulas, and 4 tables. [02]

ASSOCIATION: none

SUBMITTED: 17Oct64

ENCL: 00

SUB CODE: NM, ME

NO REF SOV: 015

OTHER: 005

ATD PRESS: 4/02

Card 2/2

URLYANSKIY, V.M.

Using coiled tin plate 165 mm.wide for stamping No.3 cans. Kons.1
ov.prom. 14 no.2:23 F '59. (MIRA 12:3)

1. Genecheskiy rybokonservnyy zavod.
(Tin cans)

84664

16.3900

S/020/60/134/006/006/031
C111/C222

AUTHOR: Urm, V.Ya.

TITLE: Reduction of Difference Equation Systems to the Standard Form

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 6,
pp. 1309 - 1312

TEXT: The system

$$(1) \quad u_p^{n+1,k} = \sum_{j,1} a_{a,j} u_j^{n,k+1},$$

where $p, j = 1, 2, \dots, m$; 1-bounded, is stable (Ref. 1) if $\|u_p^n\| \leq K \sum_j \|u_j^0\|$, X

where $\|u_p^n\| = \left\{ \sum_{k=-\infty}^{\infty} |u_p^{n,k}|^2 \right\}^{1/2}$. Let

$$(2) \quad U_p^n(s) = \sum_{k=-\infty}^{\infty} u_p^{n,k} e^{i k s}$$

and beside of (1) the system

Card 1/3

Reduction of Difference Equation Systems to the Standard Form

S/020/60/134/006/006/031
C111/C222

$$(3) \quad U^n = A^n U^0$$

is considered, where U^n is a vector function with elements of $L_2(-\pi, +\pi)$ and the matrix A depends on the parameter $t = e^{i s}$. Let

$$(4) \quad A = E + \frac{t-1}{t} M(t),$$

where $M(t)$ is a polynomial matrix having real and different eigenvalues for $s = 0$. Let the eigenvalues of $A(t)$ satisfy the condition $|\lambda| \leq q_0 < 1$

for all $s \neq 0$.

Theorem: Let exist a neighborhood of $z = 0$ in which the elements of $M(z)$ and their eigenvalues are analytic. Then a (possibly narrower) neighborhood of $z = 0$ can be given in which $M(z)$ can be transformed to a triangular form by a similarity transformation with a matrix non-degenerating in the neighborhood of $z = 0$. If the eigenvalues are different, then $M(z)$ can be transformed to a diagonal form by this transformation.

The theorem is used in order to replace stable systems (1) by simpler systems

Card 2/3

Reduction of Difference Equation Systems
to the Standard Form

84664
S/020/60/134/006/006/031
C111/C222

which then can be transformed to a diagonal form.

There are 4 references: 1 Soviet, 1 Finnish and 2 American.

PRESENTED: May 28, 1960, by S.L. Sobolev, Academician

SUBMITTED: May 15, 1960

✓

Card 3/3

25472

S/020/61/139/001/004/018
C111/C222

16 3900 1.6500

AUTHOR: Urm, V.Ya.

TITLE: Necessary and sufficient conditions for the stability of a system of difference equations

PERIODICAL: Akademiya nauk SSSR. Doklady, v.139, no.1, 1961, 40-43

TEXT: The author gives necessary and sufficient conditions for the stability of difference systems

$$u_p^{n+1,k} = \sum_{j,1} a_{p,j} u_j^{n,k+1}, \quad (1)$$

$p, j = 1, 2, \dots, m$; l -- bounded, with initial data from the class $\{l_2\}$

with the norm

$$\|u_p^n\| = \left\{ \sum_{k=-\infty}^{\infty} |u_p^{n,k}|^2 \right\}^{1/2}.$$

By a Fourier transform the system

$$U^n(t) = A^n(t) U^0(t) \quad (2)$$

can be adjoined to (1), where $t = e^{is}$.

Card 1/4

Necessary and sufficient conditions... ²⁵⁴⁷² S/020/61/139/001/004/018
C111/C222

In (Ref.1: DAN, 134, no.6 (1960)) the author proved that a matrix with analytic elements can be transformed into a triangular form by a similarity transformation with a non-degenerated analytic transition matrix.

Let the eigenvalues of $A(t)$ satisfy the conditions: $|\lambda_1| < q_0 < 1$ outside a certain neighborhood of $s = 0$, while in this neighborhood λ_1 be

analytic functions of s .

In the neighborhood of $s = 0$ let a similarity transformation be defined by which the system

$$\bar{U}^n(t) = \bar{A}_0(t) \bar{U}^0(t) \quad (3)$$

is obtained, where $\bar{A}_0(t)$ is a triangular matrix.

Every triangular matrix can be represented in the form $D+N$, where D is a diagonal matrix and $N = \{a_{ik}\}$ is a nilpotent matrix, where all a_{ik} of the principal diagonal and above it are identically equal to zero.

In (Ref.1) the system (1) was called stable if

$$\|u_p^n\| \leq K \sum_j \|u_j^0\| \quad (6)$$

Card 2/4

Necessary and sufficient conditions...

25472
S/020/61/139/001/004/018
C111/C222

is satisfied.

Theorem: In order that the system (3) generates a stable difference scheme it is necessary and sufficient that

I. The eigenvalues of $A(t)$ in the neighborhood of $s = 0$ satisfy the inequality $|\lambda_i| \leq 1$ (it is assumed that in $s = 0$ it holds $|\lambda_i| = 1$ and

the matrix consists of one box).

Considering that $|\lambda_i| \leq 1$ and $|\lambda_i| = 1$ for $s = 0$ then one obtains

$$\lambda_k = \exp \{u_k(s) + i v_k(s)\} = \alpha_0^{(k)} + \alpha_1^{(k)} s + \alpha_2^{(k)} s^2 + \dots + \alpha_n^{(k)} s^n + \dots, \quad (7)$$

$$\ln \lambda_k = i \sum_{j=0}^{2q} \bar{\alpha}_j^{(k)} s^j - \beta_{2q}^{(k)} s^{2q} + \dots,$$

where $\beta_{2q} \geq 0$, the index $2q$ depends on k .

II. The elements of \bar{A}_0 must satisfy the following conditions:

Let λ_k and λ_l be a pair of eigenvalues and

$$\alpha_0^{(k)} = \alpha_0^{(l)}, \alpha_1^{(k)} = \alpha_1^{(l)}, \dots, \alpha_j^{(k)} = \alpha_j^{(l)}.$$

Then:

Card 3/4

Necessary and sufficient conditions...²⁵⁴⁷² S/020/61/139/001/004/018
C111/C222

- a) if $j < 2q(k)$, $j < 2q(1)$ then the element a_{kl} must have an at least $(j+1)$ -fold zero in $s = 0$.
- b) if $j \geq 2q(k) = 2q(1)$ then a_{kl} must have an at least $2q$ -fold zero in $s = 0$.
- c) if $\lambda_k \equiv \lambda_1$ and $|\lambda_k|, |\lambda_1| \equiv 1$ in the whole neighborhood of $s = 0$ then $a_{kl} \equiv 0$ must hold in the neighborhood of $s = 0$.

There are 2 Soviet-bloc references.

PRESENTED: February 10, 1961, by M.V.Keldysh, Academician

SUBMITTED: December 9, 1960

Card 4/4

~~URMA D.~~

"Rheology, the science of flowing matter."

p. 162 (Probleme Feroviare) Vol. 3, no. 4, Apr. 1957
Bucharest, Rumania

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,
April 1958

URM, V.Ya.

Necessary and sufficient conditions for the stability of systems
of difference equations. Dokl. AN SSSR 139 no.1:40-43 J1 '61.
(MIRA 14:7)

1. Predstavleno akademikom M.V. Keldyshem.
(Difference equations)

URM, V.Ya.

Reduction of difference equation systems to the canonical form. Dokl.
AN SSSR 134 no.6:1309-1312 O '60. (MIRA 13:10)

1. Predstavleno akademikom S.L.Sobolevym.
(Difference equations)

80046

3/020/60/132/01/13/064

16.3900

AUTHOR: Urm, V.Ya.

TITLE: Some Remarks on the Asymptotic Behavior of Solutions to Difference Equations

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 1, pp. 56-59

TEXT: The author considers the asymptotic behavior of the solutions of difference equations in the class of sequences summable in the square. Given

$$(1) \quad u_k^{n+1} = \sum_{p=-k}^n c_{p-k} u_p^n,$$

where the initial data u_k^0 and the coefficients c_k belong to l_2 . Let

$$(2) \quad U^n(s) = \sum_{k=-\infty}^{\infty} u_k^n \exp[i k s]$$

and

$$(3) \quad U^n(s) = \lambda^{(n)}(s) U^0(s)$$

where $U^0(s)$, $\lambda(s) \in L_2[-\pi, +\pi]$. The solution of (1) can be represented as

Card 1/ 3

X

80046

Some Remarks on the Asymptotic Behavior
of Solutions to Difference Equations

S/020/60/132/01/13/064

$$(7) \quad u_k^n = \frac{1}{2\pi} \int_{-\pi}^{+\pi} \lambda^n(s) U^0(s) \exp[-i k s] ds.$$

Let

$$(8) \quad \lambda(0) = 1, \quad |\lambda(s)| < 1 \quad \text{for } s \neq 0,$$

and let exist a neighborhood $-\alpha \leq s \leq \alpha$, where

$$(9) \quad \lambda(s) = \exp \left[i \sum_{l=1}^{2p-1} \beta_l s^l - \beta_{2p} s^{2p} + \beta_{2p+1} s^{2p+1} v(s) \right]$$

where $\beta_{2p} > 0$ and $v(s)$ is analytic. Let

$$(13) \quad u_k^{(2)n} = \frac{1}{2\pi} \int_{-\alpha}^{\alpha} \exp \left[i n \sum_{l=1}^{2p-1} \beta_l s^l - n \beta_{2p} s^{2p} \right] U^0(s) \exp[-i k s] ds$$

It is shown that

Card 2/3

80046

Some Remarks on the Asymptotic Behavior
of Solutions to Difference Equations

S/020/60/132/01/13/064

$$(20) \quad \sum \left| u_k^n - u_k^{(2)n} \right|^2 \leq M_5 n^{-3/2p} + (4p+1)\delta;$$

$$0 < \delta < 1/2p.$$

A.I. Zhukov (Ref. 1) has investigated similar questions in the class of generalized functions. By an example it is shown that the asymptotic solutions of (Ref. 1) do not include the considered class.

The author thanks A.D. Solov'yev and S.K. Godunov for advices.

There are 3 references : 2 Soviet and 1 English.

PRESENTED: December 31, 1959, by S.L. Sobolev, Academician

SUBMITTED: December 28, 1959

Card 3/3

✓

AUTHOR: Eike-Rabinovich, E. I., Ioffe, I. M., Vasil'yev, E. I., Rabinov, E. I.

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 57

TOPIC TAGS: eyeball, fundus oculi, infrared light

ABSTRACT: A device for investigating the fundus oculi in infrared light consists of an illuminating part which contains the light source, a condenser, and a system of prisms or mirrors to alter the path of the light rays (see Fig. 1 of the Enclosure). An ophthalmoscopic lens is used to separate the path of the incident light from the path of the reflected light.

Card 3

L 51193-65

ACCESSION NR 456015521

ASSOCIATION: none

REMARKS

REF ID: A652

Card 2 of 4

USSR / Human and Animal Physiology. Sense Organs.
Vision.

T

Abs Jour: Ref Zhur-Biol., No 22, 1958, 102301.

Author : Urmakher, L. S.

Inst : Not given.

Title : A Stereophotogrammetric Chamber for Exposure of
the Frontal Segment of the Eye.

Orig Pub: Med. prom-st' SSSR, 1957, No 12, 56-59.

Abstract: No abstract.

Card 1/1

107

URMAKHER, L.S.

URMAKHER, L.S.

Stereophotogrammetric method for selecting contact lenses. Med.prom.
11 no.11:27-34 N '57. (MIRA 11:1)
(CONTACT LENSES) (EYE--EXAMINATION)

URMAYEV, L.S., Cand Techn Sci -- (diss) "Stereophotogrammetrical
apparatus for ophthalmologic^{1. 1954-55} objectives." Mos, 1954, 16 pp
with illustrations (Mos Inst of Engineers of Geodesy, Aerial
Survey, and Cartography) 100 copies (IL, 27-54, 112)

- 119 -

URMAKHUR, L.S.

Stereophotogrammetric cameras used for ophthalmological purposes
and the surveying of minor objects. Opt.-mekh.prom. [25] no.3:13-16
Mr '58. (MIRA 11:9)

(Photogrammetry)

ROSLAVTSEV, A.V.; URMAKHER, L.S.

Second All-Union Conference of Innovators and Efficiency Promoters
in the field of ophthalmology. Med. prom. SSSR 14 no.12:57-58 D '60.
(MIRA 13:12)

(OPHTHALMOLOGY)

(EYE, INSTRUMENTS AND APPARATUS FOR)

URMAKHER, L.S.; KROL', D.S.

Stereo-ophthalmometric method of examination of the eye.
Nov. med. tekhn. no.1:72-78 '62.

(MIRA 19:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut glaznykh
bolezney imeni Gel'mgol'tsa.

URMAKHER, Leonid Samuilovich; ROMANOV, D.A., kand. tekhn. nauk, dots.,
retsenzent; TSYGANOV, M.N., kand. tekhn. nauk, retsenzent;
APENKO, M.I., kand. tekhn. nauk, red.; SHAMAROVA, T.A., red. izd-
va; SUNGUROV, V.S., tekhn. red.

[Optics of photographic and aerial photogrammetric instruments]
Optika fotograficheskikh i aerofotogrammetricheskikh priborov.
[n.p.] Izd-vo geodez. lit-ry, 1962. 215 p. (MIRA 15:12)
(Photographic optics) (Aerial photogrammetry)

TSARITSYEA, R.I., nauchnyy sotrudnik; URMAKHER, L.S., kand.tekhn.nauk

Changes in the depth of the anterior chamber of the eye under the
influence of diamox. Ush.zap. GNI glaz.bol. no.7:299-305 '62.

(MIRA 16:5)

1. Iz glaukonnogo otdeleniya i eksperimental'no-tekhnicheskoy
laboratorii Gosudarstvennogo nauchno-issledovatel'skogo instituta
glaznykh bolezney imeni Gel'mgol'tsa.

(GLAUCOMA)

(THIADIAZOLESULFONAMIDE)

ROSLAVTSEV, A.V.; URMAKHER, L.S.

Some possibilities for the use of infrared rays in ophthalmology.
Uch.zap. GNI glaz.bol. no.7:321-324 '62. (MIRA 16:5)

1. Iz laboratorii fiziologicheskoy optiki imeni S.V. Krakova i
Gosudarstvennogo nauchno-issledovatel'skogo instituta glaznykh
bolezney imeni Gel'mgol'tsa.
(INFRARED RAYS) (EYE--EXAMINATION)

ROSLAVTSEV, A.V.; URMAKHER, L.S.; LIFSHITS, I.Ye.

Device for infrared biomicroscopy of the eye. Med.prom. 16
no.4:47-48 Ap '62. (MIRA 15:8)

1. Gosudarstvennyy nauchno-issledovatel'skiy instiut glaznykh
bolezney imeni Gel'mgol'tsa.
(EYE--EXAMINATION) (INFRARED APPARATUS AND APPLIANCES)

ROSLAVTSEV, A.V.; URMAKHER, L.S.; LEVINA, A.I.; KLEYBC, B.D.

Government standards for protective goggles. Med. prom. 16
no.6:23-26 F '62. (MIRA 15:3)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut
glaznykh bolezney imeni Gel'mgol'tsa.
(SAFETY GOGGLES)

L 27324-66 ENT(1)/EWP(e)/EWT(m)/T IJP(c) WH/GW
ACC NR: AM6002136 Monograph

UR/

39
36
B+1

Urmakher, Leonid Samuilovich

Optics of photographic and aerial photogrammetric instruments (Optika fotograficheskikh i aerofotogrammetricheskikh priborov) 2d ed., rev. and enl. Moscow, Izd-vo "Nedra," 1965. 239 p. illus., biblio. Errata slip inserted. 3200 copies printed.

TOPIC TAGS: optic element, optic glass, optic instrument, optic system, optics, geodetic instrument, photogrammetric instrument, photographic instrument

PURPOSE AND COVERAGE: Intended primarily as a textbook for students of optics, the book discusses the basic principles of light, optical glass, the construction of images, and the optical systems employed in various photographic, photogrammetric, and geodetic instruments. This second edition of the textbook differs from the original 1962 edition in that it includes discussions of the measurement of light energy, polarization light filters, and some new instruments. A special chapter has also been added on the adjustment of optical systems. References to 46 other Soviet works on optics are given.

TABLE OF CONTENTS [abridged]:

Introduction -- 3

Ch. I. General information on the nature and properties of light -- 5
Card 1/2 UDC: 535:77.011+681.4(075)

L 27324-66

ACC NR: AM002136

Ch. II. Optical glass — 38

Ch. III. Theory of an ideal optical system -- 50

Ch. IV. Optical system errors — 104

Ch. V. The eye as an optical system — 123

Ch. VI. Details and units of optical systems — 133

Ch. VII. Photographic optics — 159

Ch. VIII. Optics of photogrammetric instruments — 199

Ch. IX. Optics of geodetic instruments — 211

Ch. X. Adjustment of optical systems — 234

SUB CODE: 17,11,20

SUBM DATE: 18Feb65/ ORIG REF: 046/

Card 2/2

URMAN, S.S.

The BS-69-type centering machine. Biul.tekh.-ekon.inform.no.2:40-42
'59. (MIRA 12:3)

(Machine tools)

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001858030003-3

stretched uniaxially was placed in the direction of the stress

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001858030003-3"

SUB CODE: MT. *NP*

ENCL. 00

L 13016-63 EPF(c)/EPR/ENP(j)/EWT(m)/BDS AFFTC/ASD Pr-4/PS-4/PC-4 RM/WH
 ACCESSION NR: AP3000405 8/0191/63/000/005/0058/0061

AUTHOR: Blonim, I. Ya.; Uman, Ya. G.; Konovalov, A. G. 71

TITLE: Determination of the moisture content of plastics, molding powders, and fillers by the nuclear magnetic resonance method

SOURCE: Plasticheskiye massy*, no. 5, 1963, 58-61

TOPIC TAGS: moisture content, plastics, molding powders, fillers, nuclear magnetic resonance method, K-18-2 molding powder, cord caprone, caprone K, powdered caprone (brand B)

ABSTRACT: Because the moisture of plastics affects their mechanical properties, a number of methods have been devised for its determination. Of these, the nuclear magnetic resonance method offers many advantages, including rapidity, applicability to many kinds of material, and adaptability to automatic control. The authors used it to measure the moisture content of samples of wood powder, K-18-2 molding powder, particulate cord caprone (caprone K), and powdered caprone (brand B). Nuclear magnetic resonance spectra were determined with an MO80 type spectrometer from the Tsentral'naya laboratoriya avtomatiki (Central Automation Laboratory), and the results compared with those obtained with standard methods. From the absorption signals recorded with these materials, their moisture content was determined with

Card 1/2

L 11016-63

ACCESSION NR: AP3000405

sufficient accuracy over a moisture range of 3-17%. The error of the method (circa 0.5% for the molding powder and caprone K, and about 1% for wood powder and caprone B) should be reducible by further refinement of the technique. Orig. art. has: 6 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 10Jun63

ENCL: 00

SUB CODE: MA

NO REF SOV: 003

OTHER: 006

Card 2/2

SLONIM, I.Ya.; URMAN, Ya.G.

Nuclear magnetic resonance in oriented polymers. Part 1: Formulas for calculation of the second moment. Zhur.strukt.khim. 4 no.2: 216-223 Mr-Apr '63. (MIRA 16:5)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut plasticheskikh mass.
(Polymers) (Nuclear magnetic resonance and relaxation)

ACCESSION NR: AP3003792

8/0190/63/005/007/1016/1024

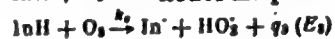
AUTHOR: Likhtenshteyn, G. I.; Urman, Ya. G.

TITLE: The theory of oxidation process inhibition

SOURCE: Vyssokomolekulyarnyye soyedineniya, v. 5, no. 7, 1963, 1016-1024

TOPIC TAGS: oxidation process, inhibitor, diphenylamine, inhibitor radical, oxygen pressure

ABSTRACT: The effect of the reactions



on the kinetics of oxidation inhibition has been studied theoretically. A system of nonlinear differential equations is written describing the oxidation process in the presence of an inhibitor. From the analysis of these equations it can be shown that a decrease in the slope of induction oxidation period as related to inhibitor concentration curves occurs as the temperature increases in proportion to the

Card 1/2

ACCESSION NR: AP3003792

oxygen pressure. A good agreement is obtained between these predictions and experimental measurements using atactic polypropylene precipitate (from ether and benzene solutions of methyl alcohol) oxidation in the presence of dephenylamine with the addition of polyphenylene. Further calculations show that the synergistic effect of inhibitors is due to elimination of the initiating action of inhibitor radicals formed by the inhibitor oxidation. "The authors are grateful to M. B. Neyman for his advice and interest." Orig. art. has: 19 formulas, 5 figures, and 2 tables.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 23Dec61

DATE ACQ: 08Aug63

ENCL: 00

SUB CODE: CC

NO REF SOV: 016

OTHER: 010

Card 2/2

NEYMAN, M.B.; LIKHTENSHTEYN, G.I.; KONSTANTINOV, Yu.; KARPETS, N.P.;
URMAN, Ya.G.

Thermal oxidative degradation of polypropylene studied by the
method of nuclear magnetic resonance. Vysokom.sped. 5 no.11:
1706-1710 N '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR.

TUTORSKIY, I.A.; SLONIM, I.Ya.; URMAN, Ya.G.; KUDRYAVTSEVA, Ye.P.;
DOGADKIN, B.A.

Study of the cyclization of rubber by the method of nuclear
magnetic resonance. Dokl. AN SSSR 152 no.3:674-676 S '63.
(MIRA 16:12)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
M.V.Lomonosova. Predstavleno akademikom A.A.Balandinym.

KAZARYAN, L.G.; DEZEN, Ya.G.

Second moment in the nuclear magnetic resonance line of the oriented amorphous film of polyethylene terephthalate. Zhur. strukt. khim. 5 no.4:524-537 Ag '64. (MIRA 18:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ACCESSION NR. AT-0098.1

10. 04. 86. 00. 003. 016

Author: Khimicheskiye svoystva i modifikatsiya polimerov
Peyman, B. V.

TITLE: Investigation of the degradation products and the change in mobility of molecular chains during the thermal degradation of polycarbonate.

SOURCE: Khimicheskiye svoystva i modifikatsiya polimerov (Chemical properties and the modification of polymers) [Moscow, Izdat. Nauka, 1964, 33-36]

TOPIC TAGS: polycarbonate, polyarylate, infrared spectroscopy, EPR spectrum, pyrolysis, thermal degradation / Diflon

ABSTRACT: It was found that the polycarbonate to that of the polyarylates based on diphenylphthalic acid (polyarylates TD and ID), has high stability towards pyrolysis up to 400C. The slight gas evolution at 400C creates at higher temperatures and at 500C it reaches 16% of the weight of the initial product. In the gaseous products of polycarbonate, H_2 , CO , CO_2 , CH_4 , ethane, ethylene and propylene were found by chromatography. The same gases were found in the pyrolysis of TD and ID at 500C.

Card 1/3

L 27873-65

ACCESSION NR: AT4049841

Infrared spectra of polycarbonate and of the solid residue after degradation at 500°C showed that the absorption bands of the CH_3 group (2970, 1365, 1385 cm^{-1}) which are present in the initial polycarbonate are missing in the solid residue, and that the intensity of the absorption bands of the groups $\text{C}=\text{O}$ and $\text{C}-\text{O}-\text{C}$ (1780 and 1210 cm^{-1}) decreases. The increase in the intensity of absorption at 1600 and 800 cm^{-1} , corresponding to the aromatic ring, indicates that the residue contains more phenyl rings after degradation. The change in the structure and molecular mobility during degradation of polycarbonate was also investigated by nuclear paramagnetic resonance spectra. Here, the width of the line depends on the degree of mobility of the molecular group containing the resonant ring. At a temperature of 150°C, a composite signal is seen. At 200°C, the signal splits into two bands. Two regions of decreased width of the line from -150 to -500 and from 150 to 500 are observed. The results indicate that the degradation of polycarbonate leads to the formation of two types of structures, and 2 formulae.

Cond.

L 27872-65

ACCESSION NR: AT4049841

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Plastics
scientific research institute)

SUBMITTED: 22May62

ENCL: 00

SUB CODE: GC, NP

Card 3/3

URMAN, Ya.G.; SLONIM, I, Ya.; KONOVALOV, A.G.

Nuclear magnetic resonance in polyformaldehyde. Vysokom.sped. 6 no.9:
1651-1655 S '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut plasticheskikh mass.

L 14352-65 EWT(m)/EWP(f) Pe-4 AFHL/SSD/ASD(m)-3/AS(mp)-2/RAEM(t)/ESD(t) RM
 S/0101/64/000/011/0028/0030
 ACCESSION NR: AP404-207

AUTHOR: Ye-milova, G. A.; Urman, Ya. G.; Slonim, I. Ya.

TITLE: Variation in the dynamic degree of crystallinity and the stereoisomer composition of polypropylene during its conversion to film 6

SOURCE: Plasticheskiye massy*, no. 11, 1964, 28-30

TOPIC TAGS: polymer crystallinity, polypropylene stereoisomer, polypropylene film, nuclear magnetic resonance, polymer film, polymer stabilizer

ABSTRACT: The effect of processing on the structure and properties of polypropylene was investigated, with emphasis on variations in the dynamic degree of crystallinity as shown by the nuclear magnetic resonance. The use of this method for the determination of the dynamic degree of crystallinity is based on the theory that the protons in the mobile polymer chain segments give rise to a broad band of signals in the NMR spectrum. The critical frequency here is $10^4 - 10^5$ c.p.s. The dynamic degree of crystallinity of the chain segments depends on the temperature. With increasing temperature, the mobility of the chain segments increases and the degree of crystallinity decreases. Since the general rigidity of the polymer structure depends on this degree of crystallinity, it is an important characteristic. In the present work, the Russian-made film-forming

Card 1/3

L 14352-65

ACCESSION NR: AP4048207

polypropylene with stabilizers such as phosphite P-2, IBMF, PiIF or SAO-6 was used as test material. The maximum tensile strength, creep and relative elongation at break were determined for samples obtained by compression molding and extrusion. The nuclear magnetic resonance spectra were taken at 30°C because at a temperature slightly higher than room temperature the complex form of the band can be seen more clearly. The typical spectrum of polypropylene is given. The effect of the forming methods (compression molding or extrusion) on the degree of crystallinity and mechanical properties was also studied. Both methods were found to give films with almost the same high degree of crystallinity. The tensile strength of compression molded films is lower and their rigidity is slightly higher than that of extruded films. This is due to the size of the crystallites, because in compression molding large crystals are formed. In extruded film cooled rapidly by cold air, a fine crystal structure is formed. Microphotographs of the two types of polypropylene films are given. The initial powdered polypropylene was pelletized and converted to film to determine the change in the degree of crystallinity during pelletizing and molding. It was found that the degree of crystallinity decreased slightly during pelletizing and extrusion. The degree of crystallinity decreased more during molding. It is clearly seen in the variation in the stereospecificity of the polymers that stereospecific block polymers are more sensitive to destruction during molding.

Card 2/3

L 14352-65
ACCESSION NR: AP4048207

than isotactic ones. Stabilizers decrease the destruction of the isotactic polymer by 50-66%.

Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MT

NO REF SOV: 008

OTHER: 003

Card 3/3

URMAN, Ya.G.; SLONIM, I. Ya.; YERMOLAYEV, A.D.

Nuclear magnetic resonance in the system: polymer in monomer
matrix. Vysokom. soed. 6 no.11:2107-2108 N '64 (MIRA 18:2)

L 5578-65 INTOMARKET - ZAT 1-1/7 Po-L/Er-L. RAZM-6-RAZM-1 /A/ 21-10-1961 /

ACCESSION NR: AP4012978

S/0020/84/154/001/0914/0917

AUTHOR: Slonim, I. Ya., Urman, Ya. G.; Vonsyatskiy, V. A.; Lilgon'kiy, B. I., Barlin, A. A. B

TITLE: Nuclear magnetic resonance in polymers with conjugated bond systems.

SOURCE: AN SSSR. Doklady*, v. 154, no. 4, 1964, 914-917

TOPIC TAGS: nuclear magnetic resonance, coplanar polymers, noncoplanar polymers, conjugated bond polymer, magnetic field, secondary magnetic moment, polyphenylene, macromolecular structure, conjugated double bond system

ABSTRACT: The nuclear magnetic resonance of polyphenylene and its derivatives was studied to determine if the molecules have a flat structure and the adjacent rings are noncoplanar. The magnetic field and the secondary moment of polyphenylene, polyazophenylene, and methyl-substituted polyazophenylene (all of 1000-3000 molecular weight) were determined at -150C, 20C and 170C. Experimental values for the secondary moment of polyphenylene are much less than the

L 8878-65

ACCESSION NR: AP4012878

2

theoretical value if the molecule were planar, but agree with theoretical value if the adjacent rings were rotated 37° along the C-C bond between the rings. Results are similar for polyazophenylene. The moment for the methyl-substituted polyazophenylene was found to be no higher than that of the unsubstituted: this indicates noncoplanarity of the adjacent rings and rotation of the methyl group in the molecule even at 196°C . Orig. art. has 1 table, 1 figure and 3 formulas.

ASSOCIATION: Institut khimicheskoy fiziki, Akademiya nauk SSSR, Institute of Chemical Physics, Academy of Sciences, Moscow, U.S.S.R. Nauchno-Issledovatel'skiy Institut Khimicheskoy Fiziki, Akademiya Nauk SSSR, Institute of Chemical Physics, Academy of Sciences, Moscow, U.S.S.R.

SUBMITTED: 04Sep63

ENCL: 00

SUB CODE: NP, Y

NO REF SOV: 005

OTHER: 00

Card 2/2

- 10 (2/261, -

L-42392-65 EWT(m)/EPF(c)/EPR/EMP(j)/T Pc-4/Pr-4/Ps-4 RM/RW

ACCESSION NR: AR5005360

S/0081/64/000/024/S020/S021

SOURCE: Ref. zh. Khimiya, Abs. 24S115

AUTHOR: Kovarskaya, B. M.; Zhigunova, I. Ye.; Slonim, I. Ya.; Urman, Ya. G.;
Neyman, M. B.

TITLE: A study of the products of degradation and of change of mobility in molecular chains during thermal degradation of a polycarbonate

CITED SOURCE: Sb. Vysokomolekul. soedineniya. Khim. svoystva i modifik.
polimerov. M., Nauka, 1964, 33-35

TOPIC TAGS: spectroscopy, degradation reaction, gas chromatography, polymer, polycarbonate

ABSTRACT: The kinetics of gas partition during thermal degradation of a polycarbonate (PMMA)-brand name 'diflon' derived from 4,4-dioxydiphenyl-2,2-propanol

residue were taken over a wide range of temperatures. It was shown that

Card 1/2

L 42392-65

ACCESSION NR: AR5006360

polycarbonate withstands a temperature of 400° for one hour without appreciable decomposition. Gas partition is intensified at higher temperatures. CO₂, CH₄, ethane, ethylene and traces of propylene were identified in the thermal degradation products. After thermal degradation at 400°, there were no detectable absorption bands in the infrared spectrum of the residue.

polycarbonate as a function of temperature: from -150 to -50° and from 10 to 210°. These zones are associated with the motion of methyl groups and of chain segments. There is no noticeable reduction in the nuclear magnetic resonance line width for the residue up to 210°. The variation in the infrared and nuclear magnetic resonance spectra indicates that the motion of methyl groups and ether bonds is associated with the thermal degradation, and the rigidity of the structure is maintained. (Authors' abstract)

SUB CODE: OC, MT

ENCL: 00

Card 2/2

L 57008-65 EWO(j)/EWT(m)/EPP(c)/EWP(j)/T/EWA(h)/EWA(1) Po-L/Pr-L/Feb

RM
ACCESSION NR: AP9011823

0192/65/004/002/0192/0197
534.27

AUTHORS: Slonim, I. Ya.; Urasn, Ya. G.; Ternolayev, A. D.; Akutin, M. S.

TITLE: Nuclear magnetic resonance in oriented polymers. 3. Radiatively polymerized polyformaldehyde

SOURCE: Zhurnal. strukturnoy khimii, - 6, no. 3, 1965, pp. 1-37

TOPIC TAGS: nuclear magnetic resonance, crystalline polymer, polyformaldehyde

ABSTRACT: The orientation of radiatively polymerized "monocrystalline" polyformaldehyde (PF) was studied by NMR techniques. NMR spectra of "monocrystalline" (5-6 mm in length) and polycrystalline specimens of PF were determined at -196C for different orientations of the principal crystalline axis in the magnetic field. The line shape did not exhibit any well developed structure. The value of the second moment $\Delta H_2^2 = 18.5 \pm 0.5 (\text{gauss})^2$. The difference from the calculated $\Delta H_2^2 = 19.9 (\text{gauss})^2$ is $1.5 (\text{gauss})^2$, and is attributed to change in the distance C - H from 1.4 \AA to 1.0 \AA and/or residual molecular motion at -196C. Calculated values for ΔH_2^2 for monocrystalline

Card 1/2